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AUTHOR Goebel, Barbara L.
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Relationships between Mobility and Academic

Achievement: A Developmental Approach

Barbara L. Goebel

Illinois State University

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Abstract

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Relationships between Mobility and Academic
Achievement: A Developmental Approach¹

Although the American life style has been characterized by high mobility since the earliest days of the nation, in recent years there has been rising concern and speculation about the impact of residential mobility on the development of youth. The concept of a rootless, alienated society has been popularized (Packard, 1972; Toffler, 1970) with the implication that mobility has a cause and effect relationship with numerous psychological and social ills. Educators and parents have been concerned about possible negative effects of mobility on the academic development of our youth. Such concerns have generally been based on intuition rather than scientific substantiation.

Many of the studies which have attempted to determine relationships between residential mobility and academic achievement have focused on special groups such as military and migrant populations making the results difficult to generalize. There has been a tendency to concentrate on elementary school populations which do not demonstrate cumulative, long-term mobility effects.

Also, most studies have treated mobility as a unidimensional rather than multidimensional phenomenon and results have been inconsistent (Moore, 1966; Gentry, L. and Schaeffer, M. A., 1960). Most of these studies have used gross indices of mobility frequency rather than differentiated patterns of mobility which consider the age of the child at the time of each move as well as whether the move was inter- or intra-community. Such designs have disregarded the fact that developmental theory, demographic data, and research evidence support the concept that behavior may be differentially affected by inter- and intra-community moves (Butler, et al., 1970; McAllister, et al., 1971), and by moves at different developmental periods (Stubblefield, 1955). Research evidence supports the

existence of critical periods in development, periods during which the organism is maximally susceptible to a particular class of stimuli. This developmental principal has been substantiated not only for physical growth but for a number of psychological aspects of development such as stimulation (Rice, R. D., 1975), sensorimotor development (White, L. & Held, R., 1966), cognition (Wachs, T. D. et al., 1971), vocalization (Weisberg, P., 1963), competence (White, B. L. & Watts, J. C., 1972), attachment (Ainsworth, M. D., 1961; Schaffer, H. R. & Callender, W. M., 1959), basic trust (Erikson, E., 1963; Bowlby, J., 1967), and learning (McGraw, M. B., 1970). It seems possible that children may also be differentially susceptible to moves made at different developmental periods.

In spite of findings that differences in various behaviors are related to sex differences (Butler, et al., 1973; Maccoby, E. E., 1966; Bee, H. L., 1974) the question of possible sex differences in the effects of mobility on academic development has been neglected by investigators.

The possibility that mobility may affect short-term classroom performance differently than it affects long-term educational development has not been carefully investigated. Cognitive functioning, along with many other aspects of development, does not advance evenly but on a "two steps forward, one step backward" basis. The effects of cumulative mobility on short-term and long-term academic performance should not be assumed to be identical and findings may differ with the type of achievement measure utilized.

Although there has been a tacit assumption that negative academic consequences result from mobility, a rationale can be established, from both theory and research, that the effects of mobility may be neutral or facilitating, as well as debilitating. Crisis theory (Fagen, et al., 1967) points out that individuals may respond to crisis, including relocation of domicile, with either adaptive or maladaptive

coping patterns. Theorists such as Erikson (1963), Piaget (1967), and Maslow (1954) have proposed that adaptive behavior strives not merely for homeostasis but for growth. A study of school children which controlled for socioeconomic status, found that migrants (mobile students) earned higher achievement test scores than non-migrants (non-mobile students) (Wise, 1971) of comparable socioeconomic level.

Increased environmental complexity, which may be an adjunct of relocation of domicile, has been found to be positively related to increased brain weight and behavior change, including superior learning in laboratory animals (Rosenzweig, 1968; Wallace, 1974). It is possible that cognitive development in children is affected by mobility patterns.

The purpose of this study was to investigate relationships between patterns of residential mobility and the academic performance of a general population sample of adolescents. To accommodate the complexity of the problem a multidimensional design was used which considered the following questions: 1) Is cumulative, total mobility significantly related to academic performance at adolescence? 2) Are differentiated mobility patterns considering inter- and intra-community moves and different developmental periods significantly related to academic performance at adolescence? 3) Are there sex differences at adolescence in relationships between academic performance and mobility patterns? 4) Are there differences in the relationships of short- and long-term academic achievement and cognitive development to mobility patterns? 5) Is academic performance at adolescence negatively related to mobility?

Method

Sample

The sample consisted of 382 adolescents (168 boys and 214 girls) from a midwestern high school student body characterized by a wide range in both socioeconomic status and rate of residential mobility. In order to assess the cumulative effects of mobility at the latest possible time which allowed inclusion of those

students who would drop out of school at the legal age of 16, spring semester sophomores were used.

Procedure

Three mobility patterns were obtained from the number of moves made at three developmental periods: preschool, elementary and adolescence. These periods are distinguishable both as to developmental characteristics and educational experiences. Two additional mobility patterns were based on data obtained as to the number of inter- and intra-community moves made. To compare the effects of total mobility rate with moves made at specific developmental periods, a cumulative mobility index was computed. This procedure yielded six mobility patterns.

Students were categorized on the basis of mobility rate into high, moderate and non-mobile groups. For the three mobility patterns based on developmental periods, categories were: non-mobile = no moves, moderate-mobile = 1 move, high-mobile = 2 or more moves. For the three cumulative mobility patterns (inter, intra and total) categories were: non-mobile = no moves, moderate mobile = 1 through 3 moves, high-mobile = 4 or more moves.

Scores from the Iowa Tests of Educational Development (ITED) were used to represent long term academic achievement; grade point averages (GPA) were computed to represent short term academic achievement; and scores from the Kuhlmann-Anderson Intelligence Test (IQ) were obtained as measures of cognitive development.

A series of one-way ANOVAS were computed separately by sex for each mobility pattern using mobility rates as independent variables and ITED, GPA and IQ as dependent variables. Scheffe' follow-up tests ($p \leq .05$) were computed where appropriate.

Results

The results of the one-way analyses of variance are presented in Table 1.

Insert Table 1 about here

In Table 2 the means for mobility rate categories are given for females, males and total sample on IQ, ITED and GPA.

Insert Table 2 about here

Scheffé follow-up tests ($p \leq .05$) showed that adolescent males who had a high mobility rate during preschool scored significantly higher on IQ than non-mobile males, and males who were moderately or highly mobile during preschool scored significantly higher on ITED at adolescence. Males who had moderate inter-community mobility rates scored significantly higher than non-mobile males on both IQ and ITED.

When data for males and females was combined in the total sample analyses, Scheffé tests once again showed that students who were highly mobile at preschool and those who had moderate inter-community mobility rates scored significantly higher on both IQ and ITED than non-mobile students. The total sample analyses also showed that students who were moderately mobile during adolescence scored significantly higher than high mobile students on ITED. A look at the mean for non-mobile adolescents suggests that if a less stringent test than Scheffé had been computed it is probable that moderately mobile adolescents would have performed significantly better than adolescents categorized as either non- or high-mobile.

No significant differences in scores on IQ, ITED, or GPA were obtained for females on the basis of mobility patterns.

Discussion

From the results it can be concluded that mobility rate, in and of itself, is not a significant factor in how adolescents perform on measures of short and long term academic achievement, and cognitive development. However, rates of

mobility during the preschool and adolescent developmental periods and inter-community rates were significantly related to the long-term academic achievement and cognitive development of the adolescent sample. These findings suggest that parents and educators need to be aware that moves at different developmental periods may have different effects on the academic progress of children, and that inter-community moves are likely to have more impact than intra-community moves. It seems possible that studies using only gross indices of residential mobility might fail to obtain significant results due to confounding.

Some evidence was obtained that there may be critical periods in development when residential mobility has greater impact on the long-term academic and cognitive development of children. Students with moderate or high mobility during preschool scored higher than those who were non-mobile, on both long-term academic achievement and cognitive development, suggesting that mobility during this period may provide benefits of an enriched environment to which children are maximally susceptible.

However, students who were moderately mobile during adolescence scored significantly higher on long-term academic achievement than highly mobile adolescents, and substantially higher than non-mobile adolescents, indicating that if "some" is good a "lot" is not necessarily better (or equally good) as far as mobility is concerned during the adolescent period. It is probable that mobility patterns differ with socioeconomic groups and that the mobility rates of higher income families reduce as the children grow older whereas lower income groups may continue to move due to job and financial problems. The differences obtained in academic performance at adolescence may then indirectly reflect socioeconomic influences. Further investigation seems needed to determine if mobility at adolescence results in academically disadvantaged students, or if socially and academically disadvantaged students tend to be mobile during adolescence.

Although mobility at adolescence related significantly to academic achievement, it did not relate significantly to cognitive development (IQ). If we make the risky assumption that the measures of achievement and intelligence used in this study represent significantly different factors, with intelligence being comparatively more dependent on maturation and achievement on educational experience, we might conclude that although achievement is affected by mobility at adolescence, the critical period for mobility effects on the development of intelligence seems to be during preschool.

The sex differences obtained were clear cut; male cognitive performance was significantly related to three of the six mobility patterns but there were no significant relationships for females although means for females tended in the same direction as means for males. There are several possible explanations as to why male academic development seems more dependent on mobility patterns than female academic development. The slower maturation rate of males, obtaining at about 80% of the skeletal age of girls until adulthood (Tanner, 1962) tends to make the sexes different populations developmentally as well as socially during childhood and adolescence. The mobility periods designated in this study may, therefore, represent different "critical periods" for the sexes with different susceptibilities and response capabilities dominant during these years. These findings suggest a need to compare the sexes on the basis of maturation rather than age, a procedure which surprisingly enough is rarely used in developmental research.

It is possible that the obtained sex differences represent differences in susceptibility to environmental influences. If the American culture provides more stress for male children, as is generally assumed, this may promote greater susceptibility to a variety of influences, including mobility. On the other hand, there is some evidence that environment may have less impact on females

as a result of the genetic discrepancy which gives females two X chromosomes and males only one, along with a Y chromosome carrying less hereditary material (Bayley, N. & Schaefer, E. W., 1964; Klinger, 1969; Garn, 1966). Since the sample size and socioeconomic range for each sex was comparable, the findings seem to reflect genuine sex differences in the impact of mobility on academic development, and point out the need to consider the sexes separately in such studies. It should be valuable to parents and educators to be aware that moving may have different effects on boys and girls.

Although long-term academic achievement and cognitive development, as measured by ITED and IQ, were significantly related to mobility patterns, no significant relationships were found between mobility and short-term academic achievement, as measured by GPA. Long-term cumulative mobility patterns of adolescents were being investigated and therefore long-term cognitive measures seem more appropriate. However, not even mobility rate during adolescence, which provided an immediate short-term measure of mobility effects on academic achievement, yielded a significant relationship with GPA. These findings may indicate that even if relocation of domicile results in temporary upset, adjustment and perhaps growth may follow; long-term mobility effects may differ from short-term effects.

It must also be noted that samples of academic behavior reflecting accumulation over time provide more reliable indices of cognitive functioning than those representing a relatively brief time span (GPA) and that a number of factors, such as superior construction, contribute to the greater reliability of standardized tests compared with teachers' grades. The differences in relationships obtained in this study may reflect differences in the reliability of the three measures used. These results suggest that investigators need to

choose measures of academic performance which are appropriate to the questions being investigated to avoid confounding of results.

It must be concluded from this study that whether the effects of mobility on academic achievement and cognitive development are beneficial, neutral, or detrimental seems to depend on the specific pattern of mobility, rate of mobility, sex of the individual and measure of academic achievement being used. The results confirm the need to treat mobility as a multidimensional phenomenon.

The current tendency to view mobility as a negative influence on academic development was not supported by the findings. No significant academic differences were found in favor of non-mobile students and there was a tendency for higher levels of academic performance to be related to moderate and high mobility rates. Since mobility seems to be indigenous to the American life style this should be encouraging to parents and educators.

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Footnotes

¹This study is based on data collected for a doctoral dissertation at the University of Illinois.

Table 1

F Values for one-way analyses of variance for non, moderate and high mobile females, males and total group with IQ, ITED, and GPA as dependent variables

Mobility Pattern	Females			Males			Total		
	IQ	ITED	GPA	IQ	ITED	GPA	IQ	ITED	GPA
Preschool	.08	.14	.58	7.50***	7.80***	2.26	3.73*	4.75**	.42
Elementary	.94	.45	1.01	1.32	.08	1.76	.44	.34	1.22
Adolescence	.22	1.13	1.42	.88	2.70	.80	.73	3.67*	1.95
Inter-Com.	1.29	1.26	.15	7.16***	6.19**	1.99	5.75**	6.38**	.42
Intra-Com.	2.49	1.59	.81	.07	.62	.83	1.00	2.02	.63
Total Mob.	1.20	1.00	.68	.94	1.08	1.08	1.44	1.76	1.35

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table 2

Means for IQ, ITED and GPA by Mobility Category and Mobility Pattern
for Females, Males and Total Group

	IQ								
	Females			Males			Total		
	Non	Mod	High	Non	Mod	High	Non	Mod	High
Preschool	66.94	68.40	67.36	58.98	67.98	76.08	63.32	68.24	71.47
Elementary	66.89	70.69	65.04	65.57	65.34	72.50	66.31	68.66	68.51
Adolescence	67.05	69.72	67.73	67.34	70.41	61.18	67.17	70.04	64.87
Inter-Com.	66.02	70.60	63.17	63.72	74.41	73.00	63.50	72.20	67.94
Intra-Com.	62.72	70.23	66.59	60.16	66.05	65.25	64.75	68.40	66.03
Total Mob.	62.17	68.85	67.70	67.44	65.20	70.29	62.91	67.40	68.92

	ITED								
	Females			Males			Total		
	Non	Mod	High	Non	Mod	High	Non	Mod	High
Preschool	16.25	16.75	16.61	13.85	17.02	18.66	15.20	16.85	17.60
Elementary	16.38	17.10	16.12	16.23	16.66	16.66	16.32	16.92	16.38
Adolescence	16.47	17.51	15.33	15.96	18.46	14.90	16.26	17.98	15.14
Inter-Com.	15.95	17.32	16.60	14.49	18.29	16.72	15.35	17.76	16.66
Intra-Com.	15.71	17.11	15.50	15.79	16.66	14.75	15.74	16.91	15.18
Total Mob.	15.40	16.92	16.28	14.69	16.34	16.91	15.08	16.69	16.59

	GPA								
	Females			Males			Total		
	Non	Mod	High	Non	Mod	High	Non	Mod	High
Preschool	3.54	3.43	3.47	3.27	3.48	3.53	3.42	3.45	3.50
Elementary	3.54	3.46	3.37	3.47	3.27	3.52	3.51	3.38	3.44
Adolescence	3.51	3.51	3.30	3.41	3.52	3.29	3.47	3.51	3.28
Inter-Com.	3.50	3.45	3.45	3.30	3.50	3.56	3.41	3.47	3.50
Intra-Com.	3.44	3.52	3.31	3.50	3.36	3.31	3.47	3.45	3.31
Total Mob.	3.59	3.45	3.45	3.52	3.33	3.45	3.56	3.40	3.45